Space Weather Forecast

Issued on Thursday, 07 September 2023 at 13:05 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of Moderate-class flares (R1-R2 radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low in the past 24 hours with several Common-class flares. There are currently six sunspot groups on the visible disc. The largest and most complex region is in the northwest quadrant and continues to grow in both areal extent and number of spots. Another region, in the east, is also growing whilst showing increasing magnetic complexity. The other regions remain relatively small and simple.

A Coronal Mass Ejection (CME) was observed in the northeast during the morning (UTC) hours. There was no evident filament lift-off on available imagery nor any flare which could have been attributed to it and so, it is considered to originate from a far-sided region and is not thought to be Earth-directed.

Solar Wind / Geomagnetic Activity: Solar wind parameters were perhaps indicative of a weak connection with a coronal hole high speed stream. The solar wind speed was slightly elevated initially, between 400-430km/s, but slowly declined to ambient levels during the second half, now between 360-380km/s. The Interplanetary Magnetic Field was weak throughout, with the north-south component varying weakly. Geomagnetic activity was Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a chance of Moderate-class flares throughout the period, mostly from the two larger regions on the disc.

Solar Wind / Geomagnetic Activity: There are two possible CMEs in the current forecast. The first is expected to be a glancing blow at worst late Day 1 or early Day 2 (07-08 Sep). A second CME is estimated to arrive late on Day 3 (09 Sep). This was extremely difficult to analyse due to the background of other CMEs, which reduces confidence in this forecast. Weak coronal hole fast wind enhancements are possible from late Day 1, but more likely Day 2 (08 Sep), and again on Days 3 into 4 (09-10 Sep).

Geomagnetic activity is expected to be mostly Quiet to Unsettled, but with a risk of Active intervals with any fast wind or CME influence. There is also a slight chance of isolated G1/Minor Storm intervals, this is most likely later Day 3 into Day 4 in association with the second CME.

Energetic Particles / Solar Radiation: Solar radiation storms are unlikely, with a very slight chance of an enhancement should any larger flares occur from the two largest regions on the disc, especially later in the period.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.